

# ABSTRACT

5 A fluorine-containing synthetic quartz glass article  
is produced by feeding a silica-forming reactant gas,  
hydrogen gas, oxygen gas, and optionally, a fluorine  
compound gas from a burner to a reaction zone, flame  
hydrolyzing the silica-forming reactant gas in the reaction  
zone to form fine particles of silica, depositing the silica  
10 particles on a rotatable substrate in the reaction zone to  
form a porous silica matrix, heating and vitrifying the  
porous silica matrix in a fluorine compound gas-containing  
atmosphere to form a synthetic quartz glass ingot, removing  
a surface portion from the ingot, and heating and molding  
15 the surface-removed ingot. The article is optically  
homogeneous as demonstrated by a high transmittance to  
vacuum UV light of less than 200 nm like ArF or F<sub>2</sub> excimer  
laser light as well as a low birefringence and a small  
refractive index distribution.